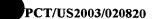
WHAT IS CLAIMED IS:

- 1. A method for enhancing cognitive ability in a human or animal, comprising administering to said human or animal a PKC activator in an amount effective for enhancing cognitive ability in a pharmaceutically acceptable carrier.
- 5 2. The method of claim 1 wherein the PKC activator selectively activates PKC α , PKC δ , and PKC ϵ .
 - 3. The method of claim 1, wherein the PKC activator is a macrocyclic lactone, a benzolactam, a pyrrolidinone or a combination thereof.
- 4. The method of claim 3, wherein the macrocyclic lactone is a bryostatin class or neristatin class compound.
 - 5. The method of claim 3 wherein the PKC activator is bryostatin-1 through bryostatin 18 or neristatin-1.
 - 6. The method of claim 1, wherein the cognitive ability enhanced is learning, memory, or attention.
- 15 7. The method of claim 5, wherein the animal is a primate.
 - 8. The method of claim 5, wherein the animal is a non-primate.
 - 9. The method of claim 1, wherein the amount of PKC activator administered is in an amount effective to treat cognitive impairment of a neurological disease or disorder.
- 20 10. The method of claim 9, wherein the neurological disease is Alzheimer's Disease, multi-infarct dementia, the Lewy-body variant of Alzheimer's Disease with or without association with Parkinson's disease; Creutzfeld-Jakob disease, Korsakow's disorder, or attention deficit hyperactivity disorder.
- 11. The method of claim 9, wherein the disorder is -associated with age, electroconvulsive therapy or brain damage.



- 12. The method of claim 11, wherein the brain damage was caused by stroke, an anesthetic accident, head trauma, hypoglycemia, carbon monoxide poisoning, lithium intoxication or a vitamin deficiency.
- 13. The method of claim 1, wherein the PKC activator is administered in an amount effected to cause an increase in sAPP.
 - 14. A method for altering cellular modulation of ion channels comprising administering a PKC activator in an amount effective for altering cellular modulation of ion channels and a pharmaceutically acceptable carrier.
- 15. The method of claim 14 wherein, said modulation is *in vivo* or *in vitro* modulation.
 - 16. The method of claim 15, wherein said ion channel is a K⁺ or Ca⁺⁺ channel.
 - 17. A method for treating neurotumors comprising administering macrocyclic lactone in an amount effective to treat said neurotumors and a pharmaceutically acceptable carrier.
- 15 18. The method of claim 17 wherein, the macrocyclic lactone is a bryostatin class or neristatin class compound.
 - 19. A method for modulating sAPP comprising administering a macrocyclic lactone in an amount effective to modulate sAPP and a pharmaceutically acceptable carrier.
- 20. The method of claim 19 wherein, the macrocyclic lactone activates PKC.
 - 21. The method of claim 19 wherein, the macrocyclic lactone is a bryostatin class or a neristatin class compound.
 - 22. The method of claim 19 wherein, the macrocyclic lactone is bryostatin-1 through bryostatin 18, or neristatin-1.
- 23. A method for modulating α -secretase comprising administering a macrocyclic lactone in an amount effective to modulate α -secretase and apharmaceutically suitable carrier.

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- 24. The method of claim 23 wherein, the macrocyclic lactone is a bryostatin class or a neristatin class compound.
- 25. The method of claim 23 wherein, the macrocyclic lactone is bryostatin-1 through bryostatin 18, or neristatin-1.
- 5 26. The method of claim 23 wherein, the macrocyclic lactone is administered *in vivo* or *in vitro*.
 - 27. The method of claim 23 wherein, the modulation of α -secretase reduces amyloid plaque formation and enhances cognitive ability in a patient with Alzheimer's Disease.
- 28. A method for treating Alzheimer's Disease comprising administering to a patient a macrocyclic lactone in an amount effective to treat Alzheimer's Disease and a pharmaceutically acceptable carrier.
 - 29. A method for treating Alzheimer's Disease comprising administering bryostatin-1 to a patient in an amount effective to treat Alzheimer's Disease and a pharmaceutically acceptable carrier.
 - 30. A method for enhancing cognitive ability in a human or animal, comprising administering to said human or animal a bryostatin or a neristatin class compound in an amount effective for enhancing cognitive ability in a pharmaceutically acceptable carrier.
- 31. A method for enhancing cognitive ability in a human or animal, comprising administering to said human or animal bryostatin-1 in an amount effective for enhancing cognitive ability in a pharmaceutically acceptable carrier.
 - 32. A method comprising the modulation of α -secretase through the administration of a pharmaceutically effective amount of a bryostatin or a neristatin class compound and a pharmaceutically acceptable carrier.
 - 33. A method for modulating α -secretase comprising administering bryostatin-1 in an amount effective to modulate α -secretase and a pharmaceutically acceptable carrier.

- 34. A method for providing a neuroprotective effect for cell comprising administering a bryostatin or neristatin class compound in an amount effective to provided a neuroprotective effect for cells which suffer from a hypoxic event and a pharmaceutically acceptable carrier.
- 5 35. A method for providing a neuroprotective effect for cell comprising administering bryostatin-1 in an amount effective to provided a neuroprotective effect for cells which suffer from a hypoxic event and a pharmaceutically acceptable carrier.
- 36. A method for the reduction of amyloid plaque formation comprising administering bryostatin-1 in an amount effective to reduce amyloid plaque formation and a pharmaceutically acceptable carrier.